

REMARKS

Claims 1-80 were pending. Claims 1-80 were objected and rejected. Claims 1 and 79 are amended herein to more particularly point out and specifically claim subject matter which the applicant considers as the invention. Support for the amendment can be found in the specification as originally submitted, particularly on page 4, lines 31-34. Claims 81-89 are newly added. Dependent claims 81-84 are directed to two statutory classes, apparatus (system) and article of manufacture (computer readable medium), that implement the respective methods recited in independent claims 1 and 79. Support for the amendment can be found in the specification as originally submitted, particularly on page 56, line 33, through page 58, line 2, as well as drawings as originally submitted. Claims 85-86 are directed to a graphical user interface described in the specification and shown in Figure 23. Dependent claims 87-89 respectively recite limitations that properly narrow the scope of the base claim 1 and intervening claims thereof. No new matter is introduced. By this Amendment, claims 1-89 are pending.

Regarding the Abstract of the Disclosure

The abstract was objected to for exceeding 150 words. To obviate this objection, a new abstract within the range of 50 to 150 words is included in the substitute specification submitted herewith. The original abstract is hereby cancelled.

Regarding the Specification

The examiner has required a substitute specification with double spaced lines. The original specification has 12 point text with 18 point spacing and therefore complies to 37 CFR 1.52 (b)(2)(i) which requires that the lines to be 1 1/2 or double spaced. To make reading easier for the examiner, however, a substitute specification reformatted with larger spacing is nonetheless submitted herewith. The substitute specification incorporates the aforementioned new abstract, since it would be redundant to submit a substitute abstract only to cancel and replace it with a new one. For similar reasons, the substitute specification incorporates the cross-reference to U.S. Patent No. 6,031,549, originally cited on page 57, line 10. No new matter is introduced or added. The substitute specification contains only subject matter from

the original specification and therefore is in compliance with 37 CFR 1.125(a) as set forth in the Office action.

Regarding Claim Objections

Claims 1-80 were objected to because they are not uniformly aligned. It is noted that line indentation is permitted under 37 CFR 1.75(i) and encouraged by MPEP 608.01(m), “[t]here may be plural indentations to further segregate subcombinations or related steps.” Further, since under the Revised Amendment Practice a listing of all pending claims is required when there is any amendment to a claim, it would be unnecessary to align the claims in the substitute specification. To comply with the examiner’s requirement, however, the substitute specification submitted herewith is nonetheless reformatted so that all 80 claims are uniformly aligned.

Regarding Claim Rejections

Claims 1-7, 9-13, 15-25, and 27-79 were rejected under 35 U.S.C. § 102(e) as being clearly anticipated by Hatlelid et al. (U.S. Pat. No. 6,522,333 B1, hereinafter referred to as “Hatlelid”). Claims 8, 14, 26, and 80 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hatlelid. The rejections are respectfully traversed. The traversal to the rejections will be collectively discussed with respect to independent claims 1 and 79.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.”

Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). “The identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Hatlelid’s invention is hereby distinguished at least because Hatlelid clearly does NOT anticipate or suggest, *inter alia*, a computer-controlled agent.

One skilled in the computer art would have readily recognized that Hatlelid teaches a visual representation of a human end-user. This “visual representation” DOES NOT and is INCAPABLE of having its own personality or behavior, lack of intelligence notwithstanding.

Contrastingly, the computer-controlled agent according to the present invention not only has intelligence, it is capable of CARRYING ON CONVERSATIONS WITH HUMANS USING NATURAL LANGUAGE [See, e.g., original Spec. page 7, line 34, and page 9, lines 2-10 and 25-34].

Computer-controlled agents might have “visual representations.” However, such “visual representations” represent the agents themselves and NOT human end-users. Therefore, the examiner’s statement that “*Hatlelid discloses a means for authoring content of a computer-controlled agent, wherein this agent is used to visually represent a user*” is incorrect. The computer-controlled agent INTERACTS WITH A USER and is not used to visually represent a user. Moreover, one skilled in the computer art would certainly appreciate that writing application modules for visual representation cannot anticipate or suggest authoring content of a computer-controlled agent – much like a manual of how to master a puppet would not have anticipated or suggested how to teach Pinocchio to talk and behave. To interpret otherwise requires a giant leap that is far from reasonable.

The fundamental, substantial differences between a visual representation and a computer-controlled agent not only distinguishes Hatlelid from the claimed invention, it also renders the rest of the rejections moot, if not inapplicable. For example, in Hatlelid, a user selects a personality type and behavioral characteristics to be associated with the user’s visual representation [Col. 6, lines 15-16 and 64-67, cited by the examiner]. The user does NOT author contents of the personality type or behavioral characteristics. That user is a user and NOT AN AUTHOR. Further, the “personality type” taught by Hatlelid does not fall within the meaning of “a potential context” specifically defined in the present application [Original Spec. page 5, lines 6-12].

Until the present application, to complete a particular computer-controlled agent usually requires a substantial amount of the detailed logic that is characteristic of computer programming [Original Spec. page 2, lines 17-19]. Hatlelid neither solves nor addresses this issue. In contrast, the present application advantageously enables even a non-technical person to directly and independently develop content for interactive agents without the need to acquire technical skills or depend upon significant support from technical experts [*id.* at lines 19-33].

The following analysis focuses on three foundational differences, which individually and in combination, categorically distinguish all pending claims from Hatlelid's teaching. As discussed herein, these claims are not anticipated by Hatlelid, are not obvious over Hatlelid, nor are they supported by Hatlelid's disclosure.

The key differences lie in (a) the different functions of the two inventions; (b) the different uses of the term "context" in the two inventions; and (c) the different scope of the behavior that is automated by the two inventions.

Hatlelid's invention teaches (a) "a method of communicating data from a user to a remote recipient," (b) the term "context" refers to additional information the user can provide "to the recipient for interpreting the communicated data," and (c) the automated behavior consists of instantiating a "behavioral movement of the visual representation" of the user, based on an immediate communication from the user.

By contrast, the present invention teaches (a) "a method for authoring content of a computer-controlled agent," (b) the term "context" refers to either a potential combination of state variables which might occur during an operation of the agent (a "potential context") or a combination of actual state variables which does occur during a particular operation of the agent (an "actual context"), such that the author can provide content to be used in controlling a behavior of the agent in the event that a particular actual context matches a particular potential context, and (c) the automated behavior may include, for example: detecting actual contexts; determining whether a given actual context matches a particular potential context;

instantiating or constructing a behavioral movement of the visual representation of the agent; selecting, instantiating, or constructing a line of dialog for the agent; operating a browser of other application in the recipient's environment; getting or putting information in a database; setting or evaluating a state variable.

Below further explains and illustrates these differences between the two inventions.

Hatlelid's invention teaches a method of communicating data from a user to a remote recipient, by enabling the user to select and send a "behavioral characteristic" that causes a visual representation of the user, the "user-avatar," to perform associated behavioral movements in the recipient's environment. The user may formulate and send other data (e.g., a verbal message) to be delivered to the recipient concurrently with the user-avatar's performance of the behavioral movements. The user-avatar's behavioral movements presumably provide an interpretation-context that enriches the recipient's interpretation of the user's communication. The user may engage in an extended communication sequence with the recipient, taking into account the recipient's intervening responses as he or she wishes, while formulating the data and selecting the behavioral characteristic for each of his or her own successive communications.

Here is a simple example of Hatlelid's invention:

- A communication system provides a set of behavioral commands (e.g., *wave*, *nod*) and behavioral characteristics (e.g., *enthusiastic*, *friendly*), which a user can combine to tell its user-avatar to perform each command according to each characteristic;
- During a communication session, a user Dave recognizes a newly connected recipient as his friend John. Intending to send an enthusiastic greeting, Dave formulates and sends John a communication comprising: the data "Hey John!" the behavioral command *wave*, and the behavioral characteristic *enthusiastic*;
- The communication is delivered to John, with the data "Hey John!" printed in a text area concurrently with movement of Dave's user-avatar to perform an *enthusiastic wave*.
- Observing Dave's user-avatar's *enthusiastic wave* as a context for his "Hey buddy!" data, John interprets Dave's communication as an enthusiastic greeting.
- John responds to Dave, "Hey Dave!"

- John and Dave continue their communication as they wish.

By contrast, the present invention teaches a method for authoring content of a computer-controlled agent by enabling an author to describe a prospective-context and create associated content for use in controlling any aspect of the agent's behavior in an actual-context that matches the prospective-context and occurs during an operation of the agent. Note that the present computer-controlled agent takes the place of Hatlelid's human user in a communication with a recipient. Like the human user, the computer-controlled agent can select (or construct) and send a behavioral description that causes a visual representation of the agent, the "agent-avatar," to perform associated behavioral movements (or other behaviors) in the recipient's environment. Also like the human user, the agent may formulate and send other data (e.g., a verbal message) to be delivered to the recipient concurrently with the agent-avatar's performance of the behavioral movements. Similarly, the agent-avatar's behavioral movements can provide an interpretation-context that enriches the recipient's interpretation of the agent's communication. Again like the human user, the agent may engage in an extended communication sequence with the recipient, taking into account the recipient's intervening responses as it wishes, while formulating the data and behavioral description for each of its own successive communications.

Because the present agent is computer-controlled, it can communicate with a recipient without run-time participation by its human author. In fact, it can communicate concurrently, asynchronously, and independently, with multiple recipients, at arbitrary times and circumstances, as determined by events outside the direct control or knowledge of the author.

Here is a simple example of the present invention:

- An authoring system provides a means of specifying behavior commands, dialog commands, behavior/dialogue characteristics, and database operations, and using those specifications, in some cases with parameters that can take on different values, to specify prospective contexts and associated content for an agent;
- Intending to create an agent named "Harmony" that can personalize her greeting behavior for individual recipients, an author:

- (a) specifies a set of behavior commands (e.g., *wave*, *nod*), parameterized dialog commands (e.g., *greet #recipient*, *#introduce-self-to #recipient*), where *#recipient* performs a database look-up for the specified recipient's name or, if it does not find the recipient, defaults to "friend," and behavior/dialog characteristics (e.g., *enthusiastic*, *friendly*), such that the agent-avatar can perform each behavioral or dialog command according to each characteristic;
- (b) further specifies that, when a recipient initiates a communication link to Harmony, she should check her database to see if she recognizes (has a record for) the newly linked recipient and then:
 - i. if she recognizes the recipient, send a communication to the recipient comprising: the dialog command *greet #recipient*, the behavior command *wave*, and the behavior/dialog characteristic *enthusiastic*;
 - ii. if she does not recognize the recipient, send a communication to the recipient comprising: the dialog command *greet #recipient*, the behavior command *nod*, and the behavior/dialog characteristic *friendly*.
- Later, while the author is sleeping, two recipients, Jane and Mary, initiate communication links to Harmony in close succession. She communicates with them concurrently, asynchronously, and independently, as follows:

Recognizing Jane –

Harmony sends a communication comprising: the dialog command *greet #recipient*, the behavior command *wave*, and the characteristic *enthusiastic*.

The communication is delivered to Jane, with the data "Hi Jane!" printed in a text area, while the Harmony-avatar performs an *enthusiastic wave*.

Observing the Harmony-avatar's wave as a context for her "Hi Jane!" data, Jane interprets Harmony's communication as an enthusiastic greeting.

Jane responds, "Hi Harmony, how are you?"

Jane and Harmony continue as they wish.

Not recognizing Mary –

Harmony sends a communication comprising: two dialog Commands *greet #recipient* and *#introduce-self-to #recipient*, the behavior command *nod*, and the characteristic *friendly*.

The communication is delivered to Mary, with the data “Hello friend. Please let me introduce myself. I’m Harmony, a computer-controlled agent. If you don’t mind, friend, may I ask you to introduce yourself?” printed in a text area, while the Harmony-avatar performs a *friendly nod*.

Observing the Harmony-avatar’s friendly nod as a context for her “Hello friend...” data, Mary interprets Harmony’s communication as a friendly greeting.

Mary responds, “Hi Harmony. I’m Mary, a human being.”

Mary and Harmony continue as they wish.

In summary, as these examples illustrate, Hatlelid’s invention is categorically different from the claimed invention. Hatlelid’s invention allows a human user to directly coordinate the movement of a visual puppet to complement the user’s own live dialog with a recipient. By contrast, the present invention allows a human author to create a computer-controlled agent that can then operate autonomously and without participation by the author and taking the place of the human user, generating the dialog, coordinating the movement, and controlling a variety of other behaviors for a number of its own puppets, each of which communicates independently with a different recipient.

Regarding Prior Art of Record Not Relied Upon

The Office action did not articulate or explain how Matsuda et al. (U.S. Pat. No. 6,466,215, hereinafter referred to as “Matsuda”) or Cheng (U.S. Pat. No. 6,329,986) apply to the claimed invention. Under 37 CFR 1.111(b), “[t]he reply must present arguments pointing out the specific distinctions believed to render the claims, including any newly presented claims, patentable over any applied references.” (emphasis added). Although the Office action did not apply either of these two references to any of the pending claims, the Applicant nevertheless submits the following.

Regarding Matsuda

Matsuda's invention enables automated creation of a story animation out of parts. Given the labor-intensive process of creating story animations "by hand," Matsuda's invention allows animation parts to be stored with attribute-value information and then selected and sequenced based on attribute-values specified in a story. It also allows for an animation part selected for one story step to be accepted or rejected, based on arithmetic evaluation of its connectivity from the animation part selected for the preceding step.

By contrast, the present invention allows an author to create a computer-controlled agent that can operate in real time, generating its own dialog, movements, and other behaviors and responding to the dialog, movements, and other behaviors of a user or other interactive entity.

Thus, the two inventions are different. At best, they are complementary. In principle, they could be used in combination. For example, using the present invention, an author could create a computer-controlled agent that, among other things, generates a "story" it wishes to perform, encodes the story in a sequence of attribute-values, and then calls upon a mechanism such as Matsuda's to generate an appropriate sequence of animation parts, which it would then execute. In practice, however, this combination would not be feasible unless Matsuda's mechanism could operate in real time.

Regarding Cheng

Cheng's invention enables priority-based communication and rendering of objects, including user-avatars, in a virtual environment. Given the typical competition for communication and rendering resources, Cheng's invention dynamically prioritizes objects for a given user, based on parameters such as relative positions of objects, user profile information, social relations among users, etc. At each point in time, user-specific object priorities determine which objects are communicated or rendered and the quality of that communication or rendering.

By contrast, the present invention allows an author to create a computer-controlled agent that can generate its own dialog, movements, and other behaviors and respond to the dialog, movements, and other behaviors of user-avatars, other agents, or other objects that may be present.

Thus, the two inventions are different. At best, they are complementary. For example, using the present invention, an author could create an agent that operates in a virtual environment. In that case, it might compete with other objects for communication and rendering resources and some mechanism, such as Cheng's, might be used to allocate resources among competing objects.

Conclusion

For the foregoing reasons, it is respectfully submitted that the present invention is patentably distinct from, not anticipated by, and unobvious in view of Hatlelid. It is further respectfully submitted that independent claims 1, 79, and 85 respectively recites subject matter not reached by the closest prior art of record under 35 USC §§ 102(e) and/or 103(a). Accordingly, independent claims 1 and 79 are submitted to be patentable.

Reliance is placed on *In re Fine*, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988) and *Ex parte Kochan*, 131 USPQ 204 (Bd. App. 1960) for allowance of the dependent claims 2-78, 80-84, and 86-89, since they differ in scope from their respective parent independent claims 1, 79, and 85 which are submitted to be patentable.

This Response/Amendment is submitted to be complete and proper in that it places the present application in a condition for allowance without adding new matters. Since the examiner has done a thorough search in the first Office action in light of the entire application disclosure and claims, no new search would be necessary. Favorable consideration and a Notice of Allowance of all pending claims are therefore earnestly solicited. The examiner is sincerely invited to telephone the undersigned at 650-331-8413 for

discussing an examiner's Amendment or any suggested actions for accelerating prosecution and moving the present application to allowance.

Respectfully submitted,



Katharina Wang Schuster, Reg. No. 50,000
Attorney for the Applicants under 37 CFR 1.34

LUMEN INTELLECTUAL PROPERTY SERVICES
2345 Yale Street, Second Floor
Palo Alto, CA 94306
(O) 650-424-0100 (F) 650-424-0141 x 8413